

REMARKS

Examination of the present application is respectfully requested.

Unentered Amendment

The Advisory Action mailed October 12, 2001 failed to indicate whether a proposed amendment to claim 5 presented in Applicant's reply filed October 1, 2001 will be entered. Applicants respectfully request the amendment to claim 5 be entered, and have checked the appropriate box on the enclosed CPA request transmittal.

Reply to Arguments in Advisory Action

The Advisory Action, in a continuation of section 5 on page 2, states that it is not inventive to optimize a range, unless the results are unexpectedly good. Because Grover teaches that the slurry "must have a pH from about 3.0 to about 11.0 to be effective" (See column 6, lines 30-31), Applicants respectfully submit that results of the slurry of the present invention, as claimed with a pH level below 3.0, are unexpectedly good relative to the prior art. Applicants submit that the results are established not by conclusory statements, but by detailed examples in the specification, which was submitted with signed declarations by the inventors.

The Advisory Action also states that Applicants' argument, that the modification suggested by the Office Action, mailed July 31, 2001, renders the slurry of Grover ineffective, is inapplicable because there is no claiming of polishing oxide. Applicants respectfully submit, however, that according to MPEP § 2143.01 (Ed. 8, Aug. 2001), if a proposed modification renders the prior art invention unsatisfactory for its intended purpose, there is no motivation to

make the proposed modification. Applicants could find no limitations in MPEP § 2143.01 that the reference must recite the intended purpose in the claims. In fact, Applicants submit that the prior art reference may not be a patent according to MPEP § 2141.01. Therefore, Applicants submit that there is no motivation to modify the oxide polishing slurry of Grover to meet the claims of the present application, as suggested. Applicants further submit that the references of Skrovan and Beyer are vague regarding pH levels, and do not provide motivation to modify the slurry of Grover, as suggested in the previous Office Action, mailed July 31, 2001.

Claim Rejections

The following arguments were previously submitted in Applicants' reply filed October 1, 2001. The Advisory Action mailed October 12, 2001 failed to address the arguments re-presented below. Applicants respectfully request each of the arguments be individually addressed.

35 U.S.C. § 103(a): Grover in view of Skrovan and Beyer

Claims 1-5, 7 and 14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Grover in view of Skrovan and Beyer. Applicants respectfully traverse this rejection in view of the following analysis.

In rejecting claims 1-5, 7 and 14, the Office Action on page 3, lines 4-10 states:

...Unlike the claimed invention, Grover doesn't describe the cerium ions being in quantity equal to the inclusion of at least 0.02 molar or 0.05-0.1 molar ammonium cerium nitrate in the liquid or the pH below 3.0. However, he describes the concentration of ammonium cerium nitrate is about 0.05-10 wt%, which would include claimed at least 0.02 molar, and concerning the pH of the solution, it is well known to polish metal with an acidic solution, such as a pH <4 and dielectric layer with a basic solution, a pH>7 (please see Skrovan and Beyer references cited below). It would have been obvious at the time of the invention for one skill in the art to determine the optimum concentration of etching parameters including

pH, chemical concentration in the slurry through test run depending on the material being polished with an anticipation of the expected result.

Applicants respectfully submit, however, that this conclusion of obviousness is improperly drawn in hindsight only after reading Applicants' claims. The Office Action does not point out any teaching or suggestion from Grover, Skrovan or Beyer as to why one of ordinary skill in the art would have been motivated to combine the teachings in the manner suggested in the Office Action. In fact, Grover teaches away from the modifications suggested in the Office Action by teaching the composition of the disclosed slurry must have a pH level above 3.0 to be effective as a chemical-mechanical polishing (CMP) slurry. See column 6, lines 21-37.

Therefore, Applicants submit that claim 1 is patentable over Grover in view of Skrovan and Beyer. Claims 2-5, 7 and 14 each depend, directly or indirectly, from claim 1. Therefore, Applicants submit that claims 2-5, 7 and 14 are also patentable over Grover in view of Skrovan and Beyer. Accordingly, Applicants respectfully request removal of this rejection.

35 U.S.C. § 103(a): Farkas

Claims 1-5, 7 and 14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Farkas et al. in view of the Farkas article. Applicants respectfully traverse this rejection in view of the following analysis.

The Examiner cites the Farkas et al. patent as describing a slurry comprised of the chemical elements claimed in the present application, except for the pH level and chemical concentration of the slurry. The Examiner then cites the Farkas article as showing different oxidizing agent concentrations with their pH levels and respective CMP rates in tables 1 and 2.

Applicants respectfully submit, however, that while table 1 shows the oxidizing agent concentrations of different CMP slurries with respect to their removal rate, the table does not show pH levels; and while table 2 shows pH levels, the table shows wet etch rates, not CMP rates. Neither table shows the chemical concentration of different slurries with their pH levels

and CMP rates. Applicants further submit that neither the Farkas et al. patent nor the Farkas article contain any suggestion that the teachings be combined as suggested in the Office Action.

Therefore, Applicants respectfully submit that claim 1 is patentable over the Farkas et al. patent and the Farkas article. Claims 2-5, 7 and 14 each depend, directly or indirectly, from claim 1. Therefore, Applicants submit that claims 2-5, 7 and 14 are also patentable over the Farkas et al. patent and the Farkas article. Accordingly, Applicants respectfully request removal of this rejection.

35 U.S.C. § 103(a): Farkas in view of Brusic

Claims 6, 8 and 9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the Farkas et al. patent and the Farkas article in view of the Brusic et al. article. Applicants submit that Brusic does not affect the patentability of claim 1. Because claims 6, 8 and 9 each depend, directly or indirectly from claim 1, Applicants submit that claims 6, 8 and 9 are also patentable over the Farkas et al. patent and the Farkas article in view of the Brusic et al. article. Accordingly, Applicants respectfully request removal of this rejection.

35 U.S.C. § 103(a): Farkas in view of Grumbine

Claims 10-13 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over the Farkas et al. patent and the Farkas article in view of the Grumbine et al. Applicants submit that Grumbine does not affect the patentability of claim 1. Because claims 10-13 each depend, directly or indirectly, from claim 1, Applicants submit that claims 10-13 are also patentable over the Farkas et al. patent and the Farkas article in view of Grumbine et al. Accordingly, Applicants respectfully request removal of this rejection.

New Claims

Claims 26-29 have been added. Applicants respectfully submit that the new claims are patentable over the prior art, and are allowable.

CONCLUSION

Applicants respectfully submit the present application is in condition for allowance, for which early action is earnestly solicited.

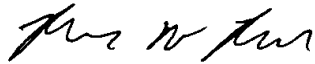
The Examiner is invited to telephone the undersigned to help expedite any further prosecution of the present application.

The Director of the U.S. Patent and Trademark Office is hereby authorized to credit any overpayment or to charge any fees or fee deficiencies under 37 C.F.R. § 1.16 and § 1.17 in connection with this communication to our Deposit Account No. 02-2666.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Please add new claims 26-29.